Academic Youth Development-Algebra I			
Agile Mind Topics Online services contain comprehensive instruction, assessment, testing, and professional services	**Time Allotted** Suggested time allotment for this topic	**Topic Descriptions**	**Materials**
SUMMER COMPONENT			
1. Building relationships to learn • Working together • Mathematics together	30 minutes for logistics 1 hour 30 minutes for YD 2 hours for math	Students begin to experience collaboration as a strategy to solve problems. They share problem-solving strategies as they explore problems that have single and multiple solutions.	•6 small balls, beanbags, or Koosh balls per 15 students •2 balloons per student •Student Activity Sheets •Chart paper and markers •Sticky notes
2. Getting smarter through problem solving • Your brain changes when you learn • Patterns in problem solving	2 hours for YD 2 hours for math	This topic introduces students to the ideas of malleable intelligence and brain growth through learning. Students continue to develop problem-solving strategies as they extend their understanding of proportionality by exploring patterns exhibited by proportional relationships.	•Colored ribbon or armbands to mark students as belonging to one of two groups •Student Activity Sheets •Chart paper and markers •Sticky notes
3. How effort affects your brain • How effort makes you smarter • Exploring solution strategies	2 hours for YD 2 hours for math	Students learn about the concept of working harder to get smarter, and they apply this idea to learning mathematics. They continue to explore multiple solution strategies and learn how being able to approach problems in multiple ways can help maintain motivation in problem solving.	•Student Activity Sheets •Chart paper and markers •Sticky notes •Modeling clay •Wire or pipe cleaners
4. Using evidence to make your case • Making it personal • Analyzing evidence to solve problems	2 hours for YD 2 hours for math	Students focus on the importance of assembling and presenting evidence to justify conclusions. They learn that not every problem has a clear-cut and definite solution, and they see that being able to defend a solution is an important part of the problem-solving process.	•Student Activity Sheets •Chart paper and markers •Sticky notes •Idea Board Personal Record sheets •Measuring tapes
5. Communicating information • Representing relationships • Teach the lesson	2 hours for math 2 hours for YD	This topic introduces students to the importance of clear communication of ideas in general and solutions to mathematical problems in particular. Students are introduced to representations of patterns and relationships as mathematical communication tools. Students begin to connect various representations of proportional situations to one another (verbal, tabular, graphical, symbolic).	•Student Activity Sheets •Chart paper and markers •Sticky notes •Measuring tapes •Graphing calculators (optional) •Graph paper •Sample patterns •Video camera (optional) •Idea Board Personal Record sheets
6. Making sense of problems and learning • The learning experience • Multiple representations	2 hours for YD 2 hours for math	Students analyze the feelings they experience as they learn. They also extend their growing understanding of multiple representations in a way that will pay big dividends in Algebra I: They learn to build on their understanding of multiple representations as they explore non-proportional situations.	•Student Activity Sheets •250 matchsticks or toothpicks per 15 students •Chart paper and markers •Sticky notes •Measuring tapes •Graphing calculators (optional) •Graph paper •Sample patterns

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7. Thinking about multiple representations • Using representations • Effective effort: thinking about thinking	2 hours for math 2 hours for YD	Students develop expertise in generating other, related representations when given a single representation of a pattern or relationship. Students also explore the use of metacognitive strategies to improve learning.	•Student Activity Sheets •Chart paper and markers •Graphing calculators (optional) •Graph paper •1 Towers of Hanoi game per 2-3 students (optional) •Computers with internet access (1 per group) •Idea Board Personal Record sheets
8. Using representations and staying motivated • Problem solving with representations • Effective effort: motivation	2 hours for math 2 hours for YD	Students dig into their problem-solving toolboxes to solve a problem from forensics. They must sift through clues and different representations of data to find a satisfactory solution. Students also learn that setting goals can support effective effort and learning, even in the face of challenging problems such as the one they tackle in this topic.	•Student Activity Sheets •Chart paper and markers •Computers with internet access (1 per group) •Graphing calculators (optional) •Graph paper •Small and large sticky notes •Idea Board Personal Record sheets
9. Communication among problem solvers • What is good communication? • Presenting the problem	2 hours for YD 2 hours for math	This topic lays the groundwork for student understanding of the importance of effective communication. Students come to understand effective communication as an interaction between the giver and getter of information. They then apply this understanding as they begin to work together solve a complex forensics problem.	•Graphing calculators (optional) •Student Activity sheets •Shape Match cards •Unlined paper •Computers with internet access (1 per group) •Idea Board Personal Record sheets
10. Solving problems as a learning community • Tools for communication • Other tools	2 hours for YD 2 hours for math	Students develop effective communication skills as they come to understand their importance in their own community of learners. As part of this learning community, students use proportional reasoning, measurement conversions, patterns, and multiple representations in order to solve a complex problem.	•Student Activity Sheets •Chart paper and markers •Graphing calculators (optional) •Graph paper •Colored copy paper(optional) •Computers with internet access (1 per pair)
11. Communication: the key to team work • Ugli Orange • Continuing the investigation	2 hours for YD 2 hours for math	Students continue to strengthen their communication and problem-solving skills as they collaborate to find a solution to the complex problem.	•Student Activity Sheets •Computers with internet access (1 per pair) •Graphing calculators (optional)
12. What you believe affects your success • Your mindset • Preparing your findings	2 hours for YD 2 hours for math	Students explore the benefits and consequences of different mindsets about intelligence. They are introduced to the concept of attribution and explore examples of the effects of making controllable and uncontrollable attributions. Students also develop group presentations to explain and justify their reasoning and solution strategies, and to link what they learned about growing the brain, effective effort, and communication to the way they solved the complex problem.	•Student Activity Sheets •Chart paper and markers •Graphing calculators (optional) •Graph paper •Computers with internet access (optional)

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13. Reflecting on your findings • Making attributions • Presenting your findings	2 hours for YD 2 hours for math	Students practice identifying attributional styles and re-attributing successes and difficulties to controllable factors. They also hone their skills as givers and getters of information as they present their solutions to the complex forensics problem.	•Student Activity Sheets •Chart paper and markers •Idea Board Personal Record sheets •Completed SAS 2 from Topic 12
14. Bridging to high school • Algebra I bridges • Youth development bridges	1 hour 30 minutes for math 1 hour 30 minutes for YD 1 hour for Post-survey	The activities in this topic help students make clear connections between their experiences in the summer component of the AYD program and their future success in freshman Algebra I (and other subjects).	•Graphing calculators (optional) •Student Activity Sheets •Chart paper and markers •Blank posters titled with "big ideas" of YD •Graph paper •Students' summer program and Algebra I goals •Individual student computers with internet access
ACADEMIC YEAR COMPONENT			
15. Applying AYD to high school • Review and reflect • Allies in the classroom • Class Survey A • Attributions journaling	4-6 hours, divided among 4 gatherings	Students revisit the lessons from the summer component and reflect on how to apply them in their Algebra I classes. They also reflect on their beliefs about learning and intelligence and compare their beliefs to those of their classmates who have not had similar AYD experiences.	•Student Activity Sheets •Chart paper and markers •Computers with internet access
16. AYD in the Algebra I classroom • Revisiting your goals • Part and whole • Your attributional style • Class Survey B	4-6 hours, divided among 4 gatherings	Students reflect on the attributions they are making for successes and struggles in their Algebra I classes. They also revisit and revise their Algebra I goals from the summer, and reflect on how their beliefs and attitudes toward learning continue to change during the academic year.	•Student Activity Sheets •Students' Algbra I goals from summer component •Students' completed Attributions Journaling sheets from Algebra I assessments •Chart paper and markers •Computers with internet access
17. Featured problems for Algebra I • Diminishing returns • Digging for dinosaurs • Wheel shop • Miles of tiles • Miles of tiles: The value of persistence	4-7 hours	This topic provides rich problem solving experiences for teachers to use with their Algebra I classes. The AYD student allies in the class revisit problem solving strategies used during the the summer and can act as models for other students in the class.The topic also provides an opportunity for students to reflect on strategies that help them persist through challenging problems.	•Student Activity Sheets •Graphing calculators (optional) •Algebra tiles •Chart paper •Markers •Computers with internet access